Final

Total Maximum Daily Loads

for the

Mud Lake Slough

WBID 1958

Fecal Coliform

March 2011

Region 4 serving the southeast

In compliance with the provisions of the Federal Clean Water Act, 33 U.S.C §1251 et. seq., as amended by the Water Quality Act of 1987, P.L. 400-4, the U.S. Environmental Protection Agency is hereby establishing the Total Maximum Daily Load (TMDL) for Fecal Coliform in Mud Lake Slough in the Upper Myakka River Basin (WBID 1958) Subsequent actions must be consistent with this TMDL.

/s/ 3/30/2011

James D. Giattina, Director
Water Protection Division

Date

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	TMDL Allocation	
Constituent	WLA & WLA (MS4) % Reduction	LA % Reduction
Fecal Coliform	93%	93%
Point Source Dischargers - Meet Permit Limits		

5. Endangered Species Present: No

6. USEPA Lead TMDL or Other: USEPA

7. TMDL Considers Point Sources/Non Point Sources: MS4 and Non Point Source

NPDES	Facility
FLS000036	Manatee County
FLS000004	Sarasota County

8. Major NPDES Discharges to surface waters addressed in USEPA TMDL:

NPDES ID	Facility Name	Facility Type
FLA182966	Farren Dakin Dairy	Wastewater Facility
FLA190284	Appalachian Material Service, Inc. RMF - MJ Ranch	Wastewater Facility
FLA182699	Cameron Dakin Dairy	Wastewater Facility

1. Introduction

Section 303(d) of the Clean Water Act requires each state to list those waters within its boundaries for which technology based effluent limitations are not stringent enough to protect any water quality standard applicable to such waters. Listed waters are prioritized with respect to designated use classifications and the severity of pollution. In accordance with this prioritization, states are required to develop Total Maximum Daily Loads (TMDLs) for those water bodies that are not meeting water quality standards. The TMDL process establishes the allowable loadings of pollutants or other quantifiable parameters for a waterbody based on the relationship between pollution sources and in-stream water quality conditions, so that states can establish water quality based controls to reduce pollution from both point and nonpoint sources and restore and maintain the quality of their water resources (USEPA, 1991).

The State of Florida Department of Environmental Protection (FDEP) developed a statewide, watershed-based approach to water resource management. Under the watershed management approach, water resources are managed on the basis of natural boundaries, such as river basins, rather than political boundaries. The watershed management approach is the framework FDEP uses for implementing TMDLs. The state's 52 basins are divided into five groups. Water quality is assessed in each group on a rotating five-year cycle. Lower Myakka River is a Group 3 basin; it was designated for TMDL development by a consent decree. FDEP established five water management districts (WMD) responsible for managing ground and surface water supplies in the counties encompassing the districts. Mud Lake Slough 1958 resides in the Southwest Florida Water Management District (SWFMD).

For the purpose of planning and management, the WMDs divided the district into planning units defined as either an individual primary tributary basin or a group of adjacent primary tributary basins with similar characteristics. These planning units contain smaller, hydrological based units called drainage basins, which are further divided by FDEP into "water segments". A water segment usually contains only one unique waterbody type (stream, lake, canal, etc.) and is about 5 square miles. Unique numbers or waterbody identification (WBIDs) numbers are assigned to each water segment.

2. Problem Definition

The TMDLs addressed in this document are being established pursuant to commitments made by the United States Environmental Protection Agency (EPA) in the 1998 Consent Decree in the Florida TMDL lawsuit (Florida Wildlife Federation, et al. v. Carol Browner, et al., Civil Action No. 4: 98CV356-WS, 1998). That Consent Decree established a schedule for TMDL development for waters listed on Florida's EPA approved 1998 section 303(d) list. The 1998 section 303(d) list identified numerous Water Body Identifications (WBIDs) in the Lower Myakka River Basin as not supporting water quality standards (WQS). After assessing all readily available water quality data,

EPA is responsible for developing a TMDL in WBID 1958 Mud Lake Slough (Figure 1). The parameter addressed in this TMDL is fecal coliform.

Most waterbodies in the Lower Myakka River Basin are designated as Class III waters having a designated use for recreation, and propagation and maintenance of a healthy, well-balanced population of fish and wildlife. The level of impairment is denoted as threatened, partially or not supporting designated uses. A waterbody that is classified as threatened currently meets WQS but trends indicate the designated use may not be met in the next listing cycle. A waterbody classified as partially supporting designated uses is defined as somewhat impacted by pollution and water quality criteria are exceeded on some frequency. For this category, water quality is considered moderately impacted. A waterbody that is categorized as not supporting is highly impacted by pollution and water quality criteria are exceeded on a regular or frequent basis. In such waterbodies, water quality is considered severely impacted.

To determine the status of surface water quality in the state, three categories of data – chemistry data, biological data, and fish consumption advisories – were evaluated to determine potential impairments. The level of impairment is defined in the Identification of Impaired Surface Waters Rule (IWR), Section 62-303 of the Florida Administrative Code (F.A.C.). The IWR is FDEP's methodology for determining whether waters should be included on the state's planning list and verified list. Potential impairments are determined by assessing whether a waterbody meets the criteria for inclusion on the planning list. Once a waterbody is on the planning list, additional data and information will be collected and examined to determine if the water should be included on the verified list.

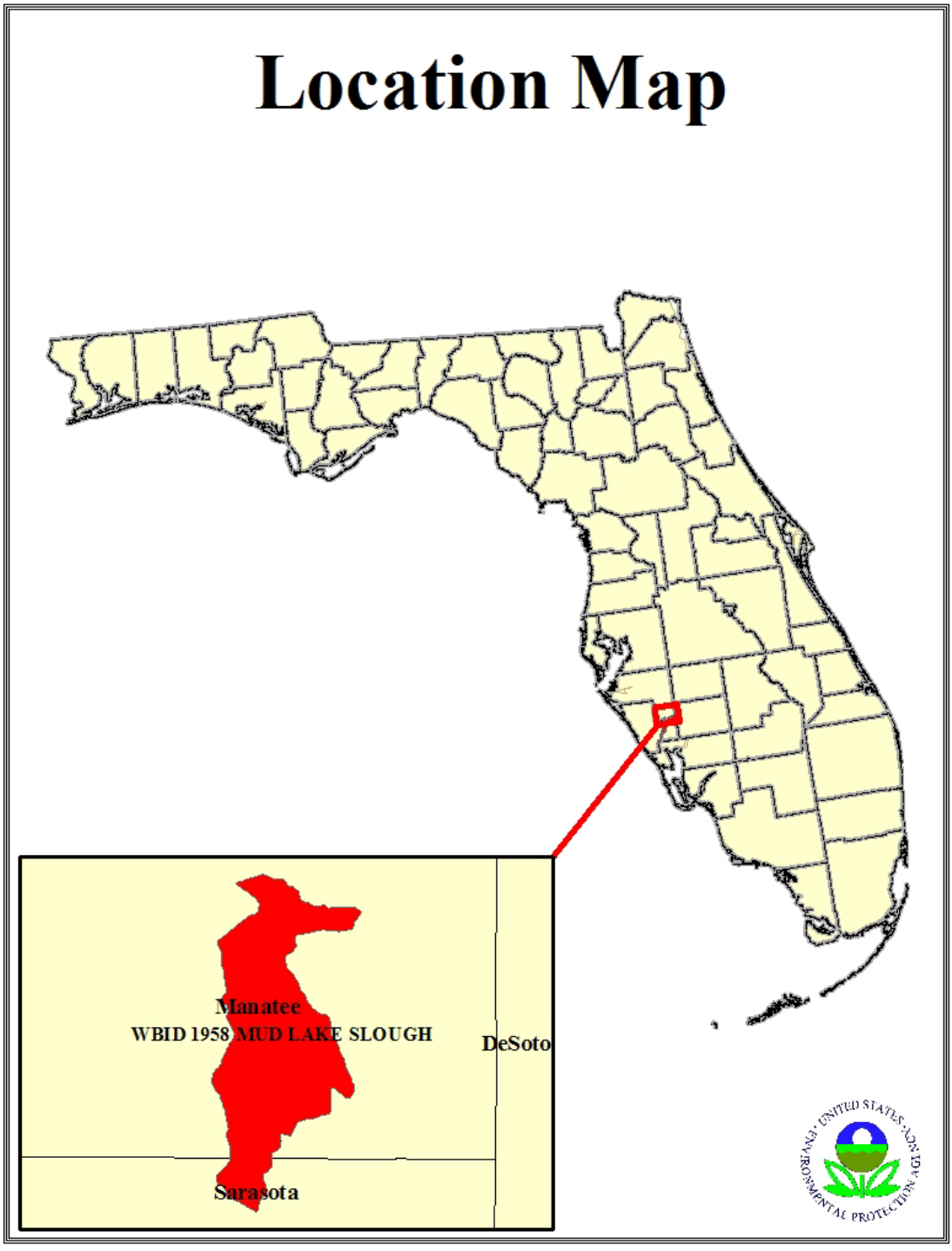

Figure 1 Location Map Mud Lake Slough

3. Watershed Description

Mud Lake Slough (WBID 1958) is located in the southeastern portion of Manatee County with the bottom portion of the watershed draining into Sarasota County. The watershed is predominantly agriculture with dairy farms being the largest component.

4. Water Quality Standards/TMDL Targets

The waterbodies in the Mud Lake Slough WBID are Class III Freshwater with a designated use of Recreation, Propagation and Maintenance of a Healthy, Well-Balanced Population of Fish and Wildlife. Designated use classifications are described in the Florida Administrative Code (F.A.C.), Section 62-302.400(1), and water quality criteria for protection of all classes of waters are established in F.A.C. 62-302.530. Individual criteria should be considered in conjunction with other provisions in water quality standards, including Section 62-302.500 F.A.C. [Surface Waters: Minimum Criteria, General Criteria] that apply to all waters unless alternative criteria are specified in F.A.C. Section 62-302.530.

4.1. Fecal Coliform Bacteria (Class III Waters)

The most probable number (MPN) or membrane filter (MF) counts per 100 ml of fecal coliform bacteria shall not exceed a monthly average of 200, nor exceed 400 in 10 percent of the samples, nor exceed 800 on any one day. Monthly averages shall be expressed as geometric means based on a minimum of 10 samples taken over a 30-day period.

The geometric mean criteria reflect chronic or long-term water quality conditions, whereas the 400 and 800 values reflect acute or short-term conditions. To determine the impairment status of Mud Lake Slough, the available data were assessed against both components of the acute criteria. It was not possible to assess against the geometric mean criteria due to insufficient fecal coliform data. The 400 MPN/100ml criterion was selected as the TMDL endpoint, since this resulted in a more stringent reduction.

5. Water Quality Assessment

WBID 1958 Mud Lake Slough was listed as not attaining its designated uses on Florida's 1998 303(d) list for fecal coliform.

To determine impairment an assessment of available data was conducted. The source for current ambient monitoring data for WBID 1958 Mud Lake Slough was the Impaired Waters Rule (IWR) data Run 40.

5.1. Water Quality Data

The tables and figures below present the station locations and time series data for fecal coliform for Mud Lake Slough.

5.1.1. 1958 Mud Lake Slough

Table 1 provides a list of the water quality monitoring stations in the Mud Lake Slough WBID.

Table 1 Water Quality Monitoring Stations for WBID 1958: Mud Lake Slough

Station	Station Name	First Date	Last Date	No. Obs.
21FLA 271136308209218	MS04	5/9/2001 11:15	9/25/2001 13:00	2
21FLA 271540508209286	MS02	9/25/2001 10:45	9/25/2001 10:45	1
21FLA 271625508209466	MS01	5/8/2001 10:40	9/25/2001 11:02	2
21FLMANAMS01	MS01	6/12/2001 8:30	9/12/2001 12:30	5
21FLMANAMS02	MS02	7/10/2001 11:40	9/12/2001 12:45	4
21FLTPA 271136308209218	MS04-Mud Lake Slough	1/28/2003 11:15	6/23/2009 11:15	24
21FLTPA 271540508209286	MS02-Mud Lake Slough	4/22/2009 10:05	6/23/2009 11:40	6
21FLTPA 271625508209466	MS01-Mud Lake Slough	4/22/2009 10:00	6/23/2009 11:45	10

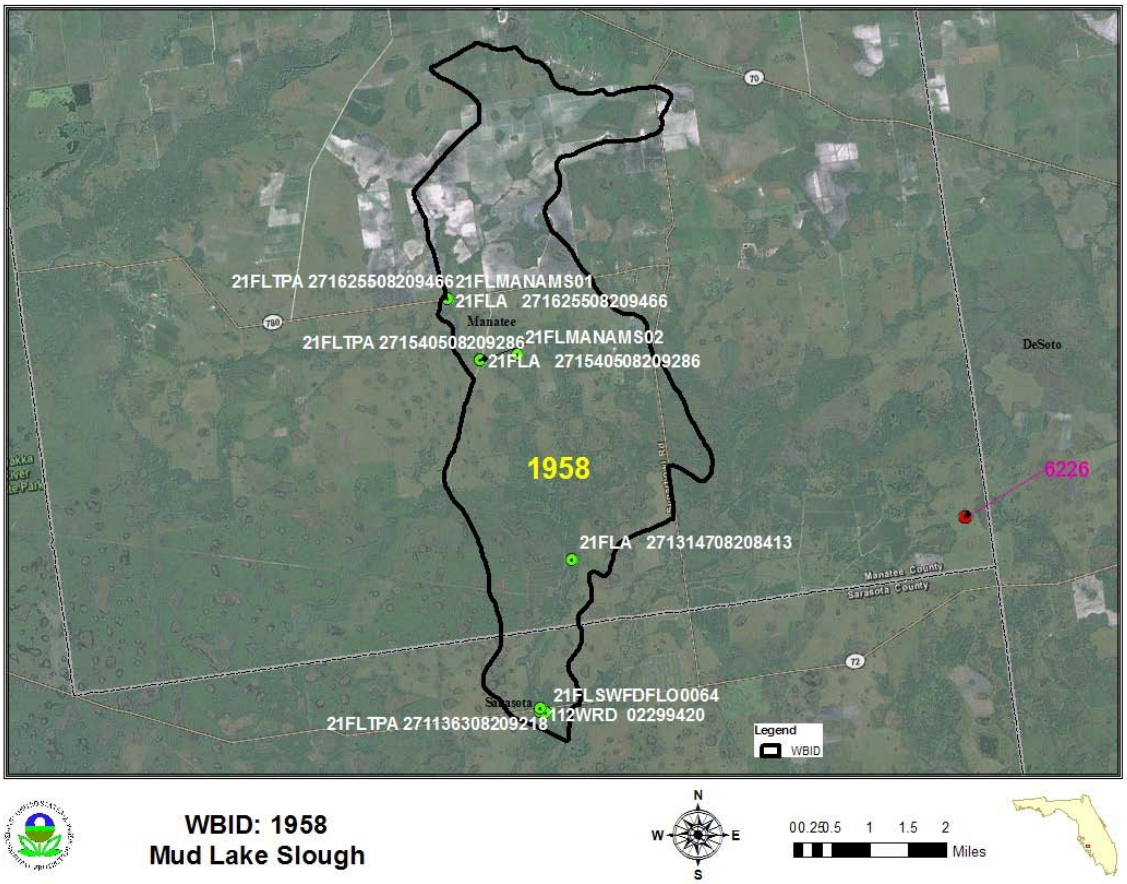

Figure 2 Station Locations for WBID: 1958 Mud Lake Slough

Fecal Coliform

Figure 3 provides a time series plot of fecal coliform data in Mud Lake Slough. There were 8 monitoring stations used in the assessment that included a total of 54 observations of which 17 (31%) fell above the water quality standard of 400 counts/100 ml fecal coliform. The minimum value was 10 counts/100 ml, the maximum was 9200 counts/100 ml and the average was 897 counts/100 ml.

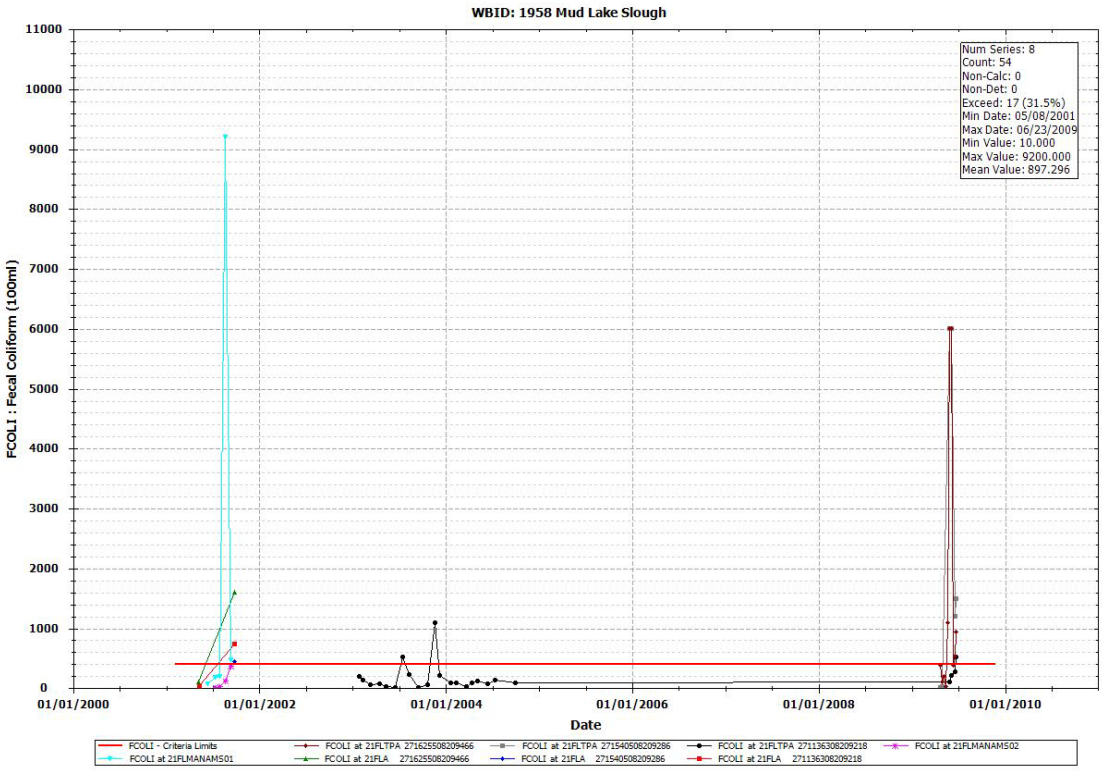

Figure 3 WBID: 1958 Mud Lake Slough Fecal Coliform

6. Source and Load Assessment

An important part of the TMDL analysis is the identification of source categories, source subcategories, or individual sources of pollutants in the watershed and the amount of loading contributed by each of these sources. Sources are broadly classified as either point or nonpoint sources. A point source is defined as a discernable, confined, and discrete conveyance from which pollutants are or may be discharged to surface waters. Point source discharges of industrial wastewater and treated sanitary wastewater must be authorized by National Pollutant Discharge Elimination System (NPDES) permits. NPDES permitted facilities, including certain urban stormwater discharges such as municipal separate stormwater systems (MS4 areas), certain industrial facilities, and construction sites over one acre, are stormwater driven sources considered "point sources" in this document.

Nonpoint sources of pollution are diffuse sources that cannot be identified as entering a waterbody through a discrete conveyance at a single location. For nutrients, these sources include runoff of agricultural fields, golf courses, and lawns, septic tanks, and residential developments outside of MS4 areas. Nonpoint sources generally, but not always, involve accumulation of pollutants on land surfaces and wash-off as a result of rainfall events.

6.1. Point Sources

Point source facilities are permitted through the Clean Water Act National Pollutant Discharge Elimination System (NPDES) Program. There are three permitted point sources in the Mud Lake Slough Watershed (Table 2).

Table 2 NPDES Dischargers in Mud Lake Slough

NPDES ID	Facility Name	Facility Type
FLA182966	Farren Dakin Dairy	Wastewater Facility
FLA190284	Appalachian Material Service, Inc. RMF - MJ Ranch	Wastewater Facility
FLA182699	Cameron Dakin Dairy	Wastewater Facility

6.1.1. Municipal Separate Stormwater System Permits

Municipal Separate Stormwater Systems (MS4s) are point sources also regulated by the NPDES program. According to 40 CFR 122.26(b)(8), a municipal separate storm sewer (MS4) is "a conveyance or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, man-made channels, or storm drains):

> (i) Owned or operated by a State, city, town, borough, county, parish, district, association, or other public body (created by or pursuant to State law)...including special districts under State law such as a sewer district, flood control district or drainage district, or similar entity, or an Indian tribe or an authorized Indian tribal organization, or a designated and approved management agency under section 208 of the Clean Water Act that discharges into waters of the United States.
>
> (ii) Designed or used for collecting or conveying storm water;
>
> (iii) Which is not a combined sewer; and
>
> (iv) Which is not part of a Publicly Owned Treatment Works."

Municipal Separate Storm Sewer Systems (MS4s) may discharge nutrients and other pollutants to waterbodies in response to storm events. In 1990, USEPA developed rules establishing Phase I of the National Pollutant Discharge Elimination System (NPDES) stormwater program, designed to prevent harmful pollutants from being washed by stormwater runoff into Municipal Separate Storm Sewer Systems (MS4s) (or from being

dumped directly into the MS4) and then discharged from the MS4 into local waterbodies. Phase I of the program required operators of "medium" and "large" MS4s (those generally serving populations of 100,000 or greater) to implement a stormwater management program as a means to control polluted discharges from MS4s. Approved stormwater management programs for medium and large MS4s are required to address a variety of water quality related issues including roadway runoff management, municipal owned operations, hazardous waste treatment, etc.

Phase II of the rule extends coverage of the NPDES stormwater program to certain "small" MS4s. Small MS4s are defined as any MS4 that is not a medium or large MS4 covered by Phase I of the NPDES stormwater program. Only a select subset of small MS4s, referred to as "regulated small MS4s", requires an NPDES stormwater permit. Regulated small MS4s are defined as all small MS4s located in "urbanized areas" as defined by the Bureau of the Census, and those small MS4s located outside of "urbanized areas" that are designated by NPDES permitting authorities.

There are two permitted MS4s in the Mud Lake Slough watershed (Table 3).

Table 3 MS4 Permits Potentially Impacted by TMDL

NPDES	Facility
FLS000036	Manatee County
FLS000004	Sarasota County

6.2. Non Point Sources

Nonpoint source pollution generally involves a buildup of pollutants on the land surface that wash off during rain events and as such, represent contributions from diffuse sources, rather than from a defined outlet. Potential nonpoint sources are commonly identified, and their loads estimated, based on land cover data. Most methods calculate nonpoint source loadings as the product of the water quality concentration and runoff water volume associated with certain land use practices. The mean concentration of pollutants in the runoff from a storm event is known as the Event Mean Concentration, or EMC.

Table 4 provides the landuse distribution for the Mud Lake Slough watershed which contains WBID: 1958. The latest landuse coverages were obtained from the Florida Department of the Environment (FDEP) FTP site. The landuses are described using the Florida Landuse Classification Code (FLUCC) Level 1. The predominant landuse draining directly to Mud Lake Slough is agriculture (49%).

Table 4 Landuse Distribution in Mud Lake Slough Watershed

Subbasin Name	Description	Area (ac)	Portion of Watershed (%)
1958	Agriculture	5587.3	48.98
1958	Rangeland	1415.2	12.4
1958	Special Classifications	684.7	6
1958	Upland Forests	1563.5	13.7
1958	Urban And Built-Up	242.5	2.13
1958	Water	22.2	0.19
1958	Wetlands	1892.8	16.59
1958	Totals	11408.2	100

Figure 4 illustrates the landuses in the Mud Lake Slough watershed.

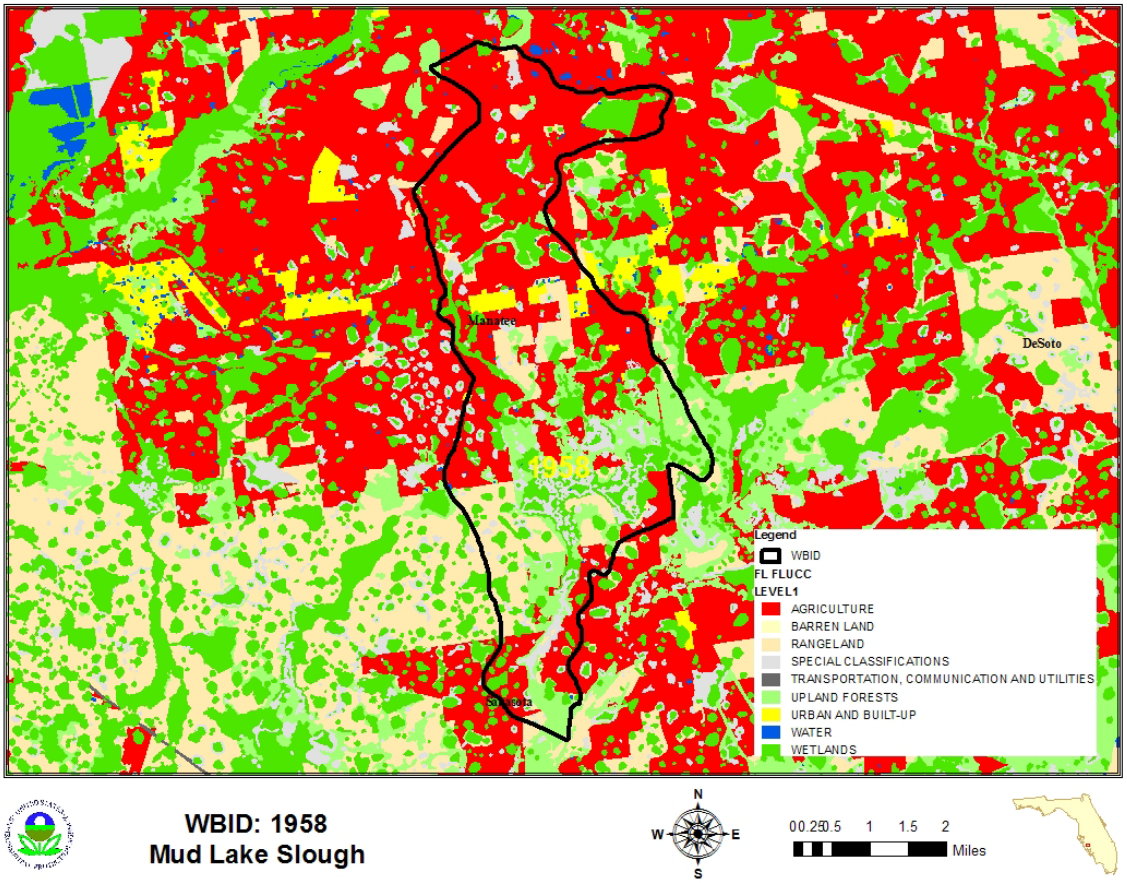

Figure 4 Mud Lake Slough Landuse Distribution

6.2.1. Urban Areas

Urban areas include land uses such as residential, industrial, extractive and commercial. Land uses in this category typically have somewhat high total nitrogen event mean

concentrations and average total phosphorus event mean concentrations. Nutrient loading from MS4 and non-MS4 urban areas is attributable to multiple sources including stormwater runoff, leaks and overflows from sanitary sewer systems, illicit discharges of sanitary waste, runoff from improper disposal of waste materials, leaking septic systems, and domestic animals.

In 1982, Florida became the first state in the country to implement statewide regulations to address the issue of nonpoint source pollution by requiring new development and redevelopment to treat stormwater before it is discharged. The Stormwater Rule, as outlined in Chapter 403 Florida Statutes (F.S.), was established as a technology-based program that relies upon the implementation of BMPs that are designed to achieve a specific level of treatment (i.e., performance standards) as set forth in Chapter 62-40, F.A.C.

Florida's stormwater program is unique in having a performance standard for older stormwater systems that were built before the implementation of the Stormwater Rule in 1982. This rule states: "the pollutant loading from older stormwater management systems shall be reduced as needed to restore or maintain the beneficial uses of water" (Section 62-4-.432 (5)(c), F.A.C.).

Nonstructural and structural BMPs are an integral part of the State's stormwater programs. Nonstructural BMPs, often referred to as "source controls", are those that can be used to prevent the generation of nonpoint source pollutants or to limit their transport off-site. Typical nonstructural BMPs include public education, land use management, preservation of wetlands and floodplains, and minimization of impervious surfaces. Technology-based structural BMPs are used to mitigate the increased stormwater peak discharge rate, volume, and pollutant loadings that accompany urbanization.

6.2.2. Agriculture

Agricultural lands include improved and unimproved pasture, row and field crops, citrus, and specialty farms. The highest total nitrogen and total phosphorus event mean concentrations are associated with agricultural land uses.

6.2.3. Rangeland

Rangeland includes herbaceous, scrub, disturbed scrub and coastal scrub areas. Event mean concentrations for rangeland are about average for total nitrogen and low for total phosphorus.

6.2.4. Upland Forests

Upland forests include flatwoods, oak, various types of hardwoods, conifers and tree plantations. Event mean concentrations for upland forests are low for both total nitrogen and total phosphorus.

6.2.5. Water and Wetlands

These occur throughout the watershed and have very low event mean concentrations down to zero.

6.2.6. Barren Land

Barren land includes beaches, borrow pits, disturbed lands and fill areas. Barren lands comprise only a small portion of the watershed. Event mean concentrations for barren lands tend to be higher in total nitrogen.

6.2.7. Transportation, Communications and Utilities

Transportation uses include airports, roads and railroads. Event mean concentrations for these types of uses are in the mid-range for total nitrogen and total phosphorus.

7. Analytical Approach

The approach for calculating coliform TMDLs depends on the number of water quality samples and the availability of flow data. When long-term records of water quality and flow data are not available, the TMDL is expressed as a percent reduction. Load duration curves are used to develop TMDLs when significant data are available to develop a relationship between flow and concentration. Flow measurements were not available for WBID 1958, nor were sufficient information available to estimate flow; therefore, this TMDL is expressed as a percent reduction.

7.1. Percent Reduction Approach for TMDL Development

Under this "percent reduction" method, the percent reduction needed to meet the applicable criterion is calculated based on a percentile of all measured concentrations. The (p X 100) percentile is the value with the cumulative probability of p. For example, the 90^{th} percentile has a cumulative probability of 0.90. The 90^{th} percentile is also called the 10 percent exceedance event because it will be exceeded with the probability of 0.10. Therefore, considering a set of water quality data, 90 percent of the measured values are lower than the 90^{th} percentile concentration and 10 percent are higher. Since the water quality standard states the fecal coliform concentration shall not exceed 400 counts per 100 ml in 10 percent of the samples, 400 should be targeted with a percentile slightly larger than 90 to ensure less than 10 percent of the values exceed 400. There are many formulas for determining the percentile and these can be found in many text books on statistics. In these TMDLs the Hazen formula was used since it is recommended in Hunter's Applied Microbiology (2002) article concerning bacteria in water. Application of the Hazen formula to data collected in WBID 1958 is provided in Appendix A and summarized below.

The percent reduction was also calculated using the maximum concentration measured in the WBID and the 800 criterion. The larger of the two percent reduction values was

selected as the TMDL. The TMDL percent reduction required to meet the coliform criteria is based on the following equation:

Percent Reduction = (existing 90th percentile concentration – criteria) / existing 90th percentile concentration × 100

8. TMDL Determination

A total maximum daily load (TMDL) for a given pollutant and waterbody is comprised of the sum of individual wasteload allocations (WLAs) for point sources, and load allocations (LAs) for both nonpoint sources and natural background levels. In addition, the TMDL must include a margin of safety (MOS), either implicitly or explicitly, to account for the uncertainty in the relationship between pollutant loads and the quality of the receiving waterbody. Conceptually, this definition is represented by the equation:

$$TMDL = \Sigma WLAs + \Sigma LAs + MOS$$

The TMDL is the total amount of pollutant that can be assimilated by the receiving waterbody and still achieve water quality standards and the waterbody's designated use. In TMDL development, allowable loadings from all pollutant sources that cumulatively amount to no more than the TMDL must be set and thereby provide the basis to establish water quality-based controls.

The TMDL was determined the percent reduction in loadings using the measured data, not to exceed the 400 MPN/100 ml more than 10% of the time. The allocations are given in Table 5. The MS4 service area is expected to reduce its loadings at the same percentage as the load allocation.

Table 5 TMDL Load Allocations for Mud Lake Slough (1958)

	TMDL Allocation	
Constituent	WLA & WLA (MS4) % Reduction	LA % Reduction
Fecal Coliform	93%	93%
Point Source Dischargers - Meet Permit Limits		

The TMDL is expressed as a daily load by multiplying the water quality target by an estimate of flow in the WBID. Mud Lake Slough is an ungaged waterbody and therefore it is not possible to estimate flow associated with the available data. However, it is recommended that flow be measured at the time of sampling to ensure compliance with the TMDL. The maximum one day load the stream can transport in any 30-day period and maintain water quality standards is calculated by multiplying 400 MPN/100 ml times the flow (in cubic feet per second), along with a conversion factor to obtain units of fecal coliform counts/day.

8.1. Critical Conditions and Seasonal Variation

The critical conditions can be defined as the environmental conditions requiring the largest reduction to meet standards. By achieving the reduction for critical conditions, water quality standards should be achieved during all other times. Seasonal variation must also be considered in TMDL development to ensure that water quality standards will be met during all seasons of the year.

The critical condition for nonpoint source coliform loading is typically an extended dry period followed by a rainfall-runoff event. During dry weather periods, coliforms build up on the land surface, and are washed off by subsequent rainfall. The critical condition for point source loading usually occurs during periods of low streamflow when dilution is minimized. A comparison of the fecal coliform concentrations against area precipitation data suggests that the excursion could have occurred in response to rainfall received the day or two prior to sampling. Critical conditions and seasonal variation are accounted for in the TMDL analysis for Mud Lake Slough Creek by selecting the largest percent reduction from the entire period of measured water quality data, and using it to represent the pollutant reduction required year-round, for the entire watershed.

8.2. Margin of Safety

There are two methods for incorporating a Margin of Safety (MOS) in the analysis: a) implicitly incorporate the MOS using conservative assumptions to develop TMDL allocations; or b) explicitly reserve a portion of the TMDL as the MOS and use the remainder for point and nonpoint source allocations. In the TMDL approach, an implicit MOS was incorporated by using the maximum fecal coliform concentration to represent the existing conditions in the waterbody and to calculate the percent reduction to meet the 400 MPN/100mL criterion, even though up to 10 percent of samples are allowed to exceed the criterion.

8.3. Waste Load Allocations

Only MS4s and NPDES facilities discharging directly into water segments (or upstream tributaries of those segments) are assigned a WLA. The WLAs, if applicable, are expressed separately for continuous discharge facilities (e.g., WWTPs) and MS4 areas, as the former discharges during all weather conditions whereas the later discharges in response to storm events.

8.3.1. NPDES Dischargers

There are three point source dischargers (Table 2) in the Mud Lake Slough watershed; these facilities must meet their permit limit for fecal coliform.

8.3.2. Municipal Separate Storm System Permits

The WLA for MS4s are expressed in terms of percent reductions equivalent to the reductions required for nonpoint sources. Given the available data, it is not possible to estimate loadings coming exclusively from the MS4 areas. Although the aggregate wasteload allocations for stormwater discharges are expressed in numeric form, i.e. percent reduction, based on the information available today, it is infeasible to calculate numeric WLAs for individual stormwater outfalls because discharges from these sources can be highly intermittent, are usually characterized by very high flows occurring over relatively short time intervals, and carry a variety of pollutants whose nature and extent varies according to geography and local land use. For example, municipal sources such as those covered by these TMDLs often include numerous individual outfalls spread over large areas. Water quality impacts, in turn, also depend on a wide range of factors, including the magnitude and duration of rainfall events, the time period between events, soil conditions, fraction of land that is impervious to rainfall, other land use activities, and the ratio of stormwater discharge to receiving water flow.

This TMDL assume for the reasons stated above that it is infeasible to calculate numeric water quality-based effluent limitations for stormwater discharges. Therefore, in the absence of information presented to the permitting authority showing otherwise, these TMDLs assume that water quality-based effluent limitations for stormwater sources of nutrients derived from this TMDL can be expressed in narrative form (e.g., as best management practices), provided that: (1) the permitting authority explains in the permit fact sheet the reasons it expects the chosen BMPs to achieve the aggregate wasteload allocation for these stormwater discharges; and (2) the state will perform ambient water quality monitoring for the purpose of determining whether the BMPs in fact are achieving such aggregate wasteload allocation.

The percent reduction calculated for nonpoint sources is assigned to the MS4 as loads from both sources typically occur in response to storm events. Permitted MS4s will be responsible for reducing only the loads associated with stormwater outfalls which it owns, manages, or otherwise has responsible control. MS4s are not responsible for reducing other nonpoint source loads within its jurisdiction. All future MS4s permitted in the area are automatically prescribed a WLA equivalent to the percent reduction assigned to the LA. Best management practices for the MS4 service should be developed to meet the percent reduction as prescribed in Table 5.

8.4. Load Allocations

The load allocation for nonpoint sources was assigned a percent reduction from the current loadings coming into Mud Lake Slough.

9. References

Florida Administrative Code. Chapter 62-302, Surface Water Quality Standards.

Florida Administrative Code. Chapter 62-303, Identification of Impaired Surface Waters.

P.R. Hunter. 2002. The Society for Applied Microbiology, Letters in Applied Microbiology. 34. 283–286.

10. Appendix A

Station	Station Name	PCode	Date & Time	R	Value	Units
21FLA 271136308209218	MS04	FCOLI	5/9/2001 11:15	K	40	100ml
21FLA 271136308209218	MS04	FCOLI	9/25/2001 13:00	B	740	100ml
21FLA 271540508209286	MS02	FCOLI	9/25/2001 10:45		440	100ml
21FLA 271625508209466	MS01	FCOLI	5/8/2001 10:40		100	100ml
21FLA 271625508209466	MS01	FCOLI	9/25/2001 11:02	K	1600	100ml
21FLMANAMS01	MS01	FCOLI	6/12/2001 8:30		80	100ml
21FLMANAMS01	MS01	FCOLI	7/10/2001 11:20		175	100ml
21FLMANAMS01	MS01	FCOLI	7/30/2001 12:15		200	100ml
21FLMANAMS01	MS01	FCOLI	8/21/2001 11:30		9200	100ml
21FLMANAMS01	MS01	FCOLI	9/12/2001 12:30		470	100ml
21FLMANAMS02	MS02	FCOLI	7/10/2001 11:40		18	100ml
21FLMANAMS02	MS02	FCOLI	7/30/2001 12:20		35	100ml
21FLMANAMS02	MS02	FCOLI	8/21/2001 11:40		120	100ml
21FLMANAMS02	MS02	FCOLI	9/12/2001 12:45		365	100ml
21FLTPA 271136308209218	MS04-Mud Lake Slough	FCOLI	1/28/2003 11:15		200	100ml
21FLTPA 271136308209218	MS04-Mud Lake Slough	FCOLI	2/11/2003 10:15		140	100ml
21FLTPA 271136308209218	MS04-Mud Lake Slough	FCOLI	3/11/2003 8:20	K	55	100ml
21FLTPA 271136308209218	MS04-Mud Lake Slough	FCOLI	4/15/2003 10:15	K	80	100ml
21FLTPA 271136308209218	MS04-Mud Lake Slough	FCOLI	5/12/2003 10:15	K	20	100ml
21FLTPA 271136308209218	MS04-Mud Lake Slough	FCOLI	6/16/2003 10:15	K	15	100ml
21FLTPA 271136308209218	MS04-Mud Lake Slough	FCOLI	7/14/2003 10:15		525	100ml
21FLTPA 271136308209218	MS04-Mud Lake Slough	FCOLI	8/11/2003 12:05		230	100ml
21FLTPA 271136308209218	MS04-Mud Lake Slough	FCOLI	9/15/2003 11:20	B	10	100ml
21FLTPA 271136308209218	MS04-Mud Lake Slough	FCOLI	10/20/2003 11:40	K	55	100ml
21FLTPA 271136308209218	MS04-Mud Lake Slough	FCOLI	11/18/2003 11:05	B	1090	100ml
21FLTPA 271136308209218	MS04-Mud Lake Slough	FCOLI	12/9/2003 11:40		210	100ml

21FLTPA 271136308209218	MS04-Mud Lake Slough	FCOLI	1/21/2004 11:05	B	90	100ml
21FLTPA 271136308209218	MS04-Mud Lake Slough	FCOLI	2/10/2004 11:00	K	85	100ml
21FLTPA 271136308209218	MS04-Mud Lake Slough	FCOLI	3/22/2004 9:40	B	25	100ml
21FLTPA 271136308209218	MS04-Mud Lake Slough	FCOLI	4/12/2004 11:10	B	90	100ml
21FLTPA 271136308209218	MS04-Mud Lake Slough	FCOLI	5/3/2004 10:15		120	100ml
21FLTPA 271136308209218	MS04-Mud Lake Slough	FCOLI	6/14/2004 11:35	B	75	100ml
21FLTPA 271136308209218	MS04-Mud Lake Slough	FCOLI	7/12/2004 9:45		130	100ml
21FLTPA 271136308209218	MS04-Mud Lake Slough	FCOLI	9/29/2004 10:20		96	100ml
21FLTPA 271136308209218	MS04-Mud Lake Slough	FCOLI	5/27/2009 11:30	B	110	100ml
21FLTPA 271136308209218	MS04-Mud Lake Slough	FCOLI	6/3/2009 11:45		210	100ml
21FLTPA 271136308209218	MS04-Mud Lake Slough	FCOLI	6/17/2009 11:00		270	100ml
21FLTPA 271136308209218	MS04-Mud Lake Slough	FCOLI	6/23/2009 11:15		520	100ml
21FLTPA 271540508209286	MS02-Mud Lake Slough	FCOLI	4/22/2009 10:05	B	16	100ml
21FLTPA 271540508209286	MS02-Mud Lake Slough	FCOLI	4/29/2009 10:05	B	30	100ml
21FLTPA 271540508209286	MS02-Mud Lake Slough	FCOLI	5/27/2009 11:00		6000	100ml
21FLTPA 271540508209286	MS02-Mud Lake Slough	FCOLI	6/3/2009 11:20		6000	100ml
21FLTPA 271540508209286	MS02-Mud Lake Slough	FCOLI	6/17/2009 10:40	B	1200	100ml
21FLTPA 271540508209286	MS02-Mud Lake Slough	FCOLI	6/23/2009 11:40	B	1500	100ml
21FLTPA 271625508209466	MS01-Mud Lake Slough	FCOLI	4/22/2009 10:00		390	100ml
21FLTPA 271625508209466	MS01-Mud Lake Slough	FCOLI	4/29/2009 9:50	B	100	100ml
21FLTPA 271625508209466	MS01-Mud Lake Slough	FCOLI	5/5/2009 11:55	B	190	100ml
21FLTPA 271625508209466	MS01-Mud Lake Slough	FCOLI	5/13/2009 12:05	B	34	100ml

21FLTPA 271625508209466	MS01-Mud Lake Slough	FCOLI	5/20/2009 10:30	B	1100	100ml
21FLTPA 271625508209466	MS01-Mud Lake Slough	FCOLI	5/27/2009 10:40		6000	100ml
21FLTPA 271625508209466	MS01-Mud Lake Slough	FCOLI	6/3/2009 11:05		6000	100ml
21FLTPA 271625508209466	MS01-Mud Lake Slough	FCOLI	6/10/2009 10:35		380	100ml
21FLTPA 271625508209466	MS01-Mud Lake Slough	FCOLI	6/17/2009 10:25		540	100ml
21FLTPA 271625508209466	MS01-Mud Lake Slough	FCOLI	6/23/2009 11:45	B	940	100ml